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EXAMINER

LIN, WEN TAI

ART UNIT	PAPER NUMBER
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2154

DATE MAILED: 01/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

14

**Office Action Summary**

Application No.

09/583,966

Applicant(s)

HALL ET AL.

Examiner

Wen-Tai Lin

Art Unit

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**- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40, 42-45, 47-52 and 54-57 is/are rejected.
- 7) ☒ Claim(s) 41, 46, 53, 58 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-58 are presented for examination.
2. The drawings are objected to because some legends in Figs. 3 and 4 are found to be contradicting what is described in the specification. For example, the legends in Fig. 3 specify that the FIFO has to have at least 27 slots from full to qualify an "almost full" status and at least 3 slots from empty to qualify an "almost empty". However, the description at page 7, paragraph 4 of the specification states that the "almost full" is 27 or less slots and at pages 9 (paragraph 4) and 10 (paragraph 2) appear to state that the "almost empty" is 3 or less slots away from being completely empty.
3. The specification is objected to because inconsistencies are found in describing the conditions for "almost full" and "almost empty" statuses in relating to Figs. 3 and 4. Specifically, the description at page 7, paragraph 4, an "almost full" FIFO is defined as 27 or less slots away from being completely full, however, page 9, paragraph 3, the "almost full" FIFO is defined as at least 27 bytes (which is equivalent to at least 27 slots in terms of STS-1 frame) away from being full. Likewise, the "almost empty" status described at page 11, paragraph 2 and paragraph 4 appears to be contradicting each other.

Notice that the inconsistencies pointed out above do not represent a complete list of similar/potential errors. Applicant is reminded to correct/clarify all the other unfound errors/inconsistencies that may exist in the drawings and/or the specification.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

- a. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-38, 42-43, 47-48, 50-51 and 55-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctively claim the subject matter which applicant regards as the invention.

(i) As to claims 1-4, 10-12, 18-21 and 25-27, it is unclear how a buffer status (which is an attribute of the buffer) has anything to do with a transport gap (which describes an overhead portion of a frame structure, of which overhead data is not entered into the buffer). That is, without further engaging an implementation process, the word "keying" (or "identifying", as suggested by the applicant in a remark in response to the previous office action) is indefinite because the relationship between the buffer status and the transport gap (i.e., the buffer status and the transport gap) has not been properly defined in the claims.

(ii) As to claim 15, it appears that the phrase "the transmit buffer" lacks antecedent basis.

(iii) As to claims 31-38, it is unclear what does "the number of columns" stand for [i.e., the number being equate to the amount of remaining empty slots in the buffer or the amount of occupied slots in the buffer?].

(iv) As to claims 31-38, it is unclear whether the "number of columns present in a non-standard SONET transfer gap" is based on per row of each frame or per entire frame? [e.g., in accordance with the non-standard SONET frame of Figs. 3 or 4, a per-row-based definition would lead to a situation where the "almost full" status must be set to substantially equal to zero because there are 8 rows that do not contain any column of overhead data in the non-standard SONET transport gap (see 204 of Fig.3). On the other hand, if the number of columns is based on the entire frame, then this "almost full" status is a fixed status during the processing of the entire frame.

(v) As to claims 42-43 and 47-48, it is unclear why an almost empty status is based on a detection that the receive buffer has less empty space (or quantitatively, less than or equal to 5 columns of data space) than required to buffer data while the almost empty status is supposed to trigger positive stuffing (i.e., filling in the buffer)

and, contradictorily, the legend of Figure 3 defines that the almost empty status is "at least 3 or 5 slots from empty"?

(vi) As to claims 50-51 and 55-56, it is unclear why an almost full status is based on a detection that the transmit buffer has less empty space (or quantitatively, less than or equal to 5 columns of data space) than required to buffer data while the almost full status is supposed to trigger negative stuffing (i.e., extracting data from the buffer) and, contradictorily, the legend of Figure 4 defines that the almost full status is "at least 3 or 5 slots from full"?

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102

that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 8, 10-14, 16 and 18-30 are rejected under 35 U.S.C. 102(e) as

being anticipated by Ryan et al.[U.S. Pat. No. 6628651].

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8. As to claim 1, Ryan teaches the invention as claimed including: a method for determining buffer status, said method comprising:

- keying a buffer status to a transport gap other than a standard SONET transport gap [Figs.5 & 8; Abstract; col. 8, lines 32-59; note that since TVT is a non-standard payload frame, its associated transport overhead, be it possessing the same transport overhead structure as that of a standard SONET frame, is also referred to as a non-standard transport gap – see Applicant's remarks at page 18, line 6 wherein Applicant clarifies that "a non-standard transport gap is the transport gap of a non-standard frame].

9. As to claims 2-3, Ryan further teaches that said keying a buffer status to a transport gap other than a standard SONET transport gap further comprises:

- keying a transmit buffer status of a transmit buffer to a transport gap other than the standard SONET transport gap [141-146, Fig.4; i.e., each of the output side interface has a transmit buffer holding the frame overhead as illustrated in Fig.5], wherein
- the transmit buffer interposed between a pointer interpreter [212, Fig.5] which receives data from a switching matrix [40, Fig.4] and a pointer generator [216, Fig.5] which prepares a standard SONET STS-N frame [Abstract: lines 5-9]

10. As to claims 4-5, Ryan further teaches that said keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:
  - keying the transmit buffer to at least a column length of a non-standard SONET transport gap, wherein each column of the non-standard SONET transport gap contains 1 byte per each STS channel in use [Fig.9; col.8, lines 51-59; col.11, lines 16-54].
11. As to claim 6, Ryan further teaches that said keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:
  - keying a pointer generator constructed to read data from the transmit buffer to at least a column length of a non standard SONET transport gap [216, Fig.5].
12. As to claim 8, Ryan further teaches that said keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:
  - keying a pointer interpreter constructed to write data to the transmit buffer to at least a column length of a non standard SONET transport gap [212, Fig.5].
13. As to claims 10-14, 16 and 18-30, since the features of these claims can also be found in claims 1-6 and 8 (note that Ryan's system includes both receive buffer and transmit buffer, which are symmetrically identical), they are rejected for the same reasons set forth in the rejection of claims 1-6 and 8 above.



14. Claim 39 is rejected under 35 U.S.C. 102(e) as being anticipated by AAPA [Applicant Admitted Prior Art].

15. As to claim 39, AAPA teaches the invention as claimed including: a method for maintaining communications comprising:

- detecting a transition involving at least one SONET frame;
- in response to said detecting yielding a determination that a receive FIFO buffer is almost full during the transition involving at least one SONET frame, engaging in negative stuffing; and
- in response to said detecting yielding a determination that a receive FIFO buffer is almost empty during the transition involving at least one SONET frame, engaging in positive stuffing [Specification: page 2, paragraph 2].

16. Claims 39-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Baydar et al.[U.S. Pat. No. 5717693].

17. As to claim 39, Baydar teaches the invention substantially as claimed including:

a method for maintaining communications comprising:

- detecting a transition involving at least one SONET frame;

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- in response to said detecting yielding a determination that a FIFO buffer is almost full during the transition involving at least one SONET frame, engaging in negative stuffing; and
- in response to said detecting yielding a determination that a FIFO buffer is almost empty during the transition involving at least one SONET frame, engaging in positive stuffing [col.19, lines 6-16; Fig.4A].

18. As to claim 40, Baydar further teaches that the determination that a receive buffer is almost full comprises detecting that the receive buffer has less empty space than that required to buffer data during construction of a non-standard transport gap [Abstract; Fig.4A; col.3, lines 5-14; e.g., the payload portion of the VT structure has a format different from the standard SONET frame format].

### ***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 9, 17, 31-38, 42-45, 47-52 and 54-55 are rejected under 35 U.S.C.

103(a) as being unpatentable over Baydar et al.[U.S. Pat. No. 5717693], as

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applied to claims 39-40, further in view of Ryan et al. [U.S. Pat. No. 6628851], as applied to claims 1-6, 8, 10-14, 16 and 18-30 above.

21. As to claims 9, 17, 31-38, 42-45, 47-52, and 54-57, Baydar teaches the invention substantially as claimed including flagging a receive buffer with an almost full status and an almost empty status for preventing the buffer being inadvertently overwritten and for balancing the input/output rate differences. The system is constructed for overcoming the STS/STM standard SONET transport gap [See Abstract; Fig. 4A and related text].

Baydar does not specifically teaches that the system is also applicable to a transmit buffer.

However, Ryan teaches a system with an interface stage buffer coupled to each input and out channel of a space switch, wherein the buffer associated with the input channel is a receive buffer (involving the role of converting from a standard SONET frame to an internal TVT frame) and the buffer associated with the output channel is a transmit buffer (involving the role of converting from the internal TVT frame to a standard SONET frame), respectively [See Abstract and Figs. 3-5 and passages cited in the aforementioned paragraphs of this office action].

Ryan on the other hand does not specifically teach flagging the buffers with almost full and almost empty statuses.

However, since Ryan's internal frame (i.e., TVT frame) is a non-standard SONET frame (although it adopts the same transport overhead structure as that of a

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standard SONET frame, the transport gap associated with the TVT frame is also referred to as a non-standard transport gap – see Applicant's remarks at page 18, line 6). As such, both Baydar's and Ryan's systems deal with the standard transport gap (e.g., 3 columns per row of overhead data in STS-1 frame) and therefore Baydar's treatment of the FIFO buffer is obviously also applicable to Ryan's system. That is, the combination of Baydar's and Ryan's teachings would yield the invention as claimed, wherein setting the receive (or transmit) buffers as "almost empty" (or "almost full") for a 3-5 columns of slots from empty (or from full) is an obvious choice because the Baydar in view of Ryan's system also handles transitions involving a 3 column-per-row overhead.

22. Claims 7 and 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office Action and to include all of the limitations of the base claim and any intervening claims.
23. Claims 41, 46, 53 and 58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:  
  
Pointer [U.S. Pat. No. 5563890]; and

Demiray et al. [U.S. Pat. No. 5872780].

25. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 days from the mail date of this letter. Failure to respond within the period for response will result in ABANDONMENT of the application (see 35 U.S.C. 133, M.P.E.P. 710.02, 710.02(b)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Tai Lin whose telephone number is (703)305-4875. The examiner can normally be reached on Monday-Friday (8:00-5:00) .

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703)305-8498. The fax phone numbers for the organization where this application or proceeding is assigned are as follows:


(703)872-9306 for official communications; and

(703)746-5516 for status inquires draft communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Wen-Tai Lin

December 31, 2003

  
12/31/03